

ON A SUBTERRANEAN SNAIL AND A TORNID FROM NEW ZEALAND

By W. F. PONDER*

Pls. 4, 5.

Abstract: A new genus is created for a new species of hydrobiid snail from a cave in East Takaka, Nelson. A new tornid from the littoral zone of the Wellington West Coast, which is tentatively placed in the genus *Cochliolepis* Stimpson, is described. The radula and operculum of both species are described together with notes on the animal.

FAMILY HYDROBIIDAE

GENUS *OPACUINCOLA* n. gen.

Type species: *Opacuincola caeca* n. sp.

Diagnosis: Shell smooth, small, globose, spire short, aperture oval, outer lip not much retracted, umbilicate. Operculum thin, horny, of a few spirals. Radula with a moderately large central tooth with lateral flanges which bear a few denticles; cutting edge with several rather weak cusps. Lateral tooth short, with moderately large cusps. Marginal teeth elongate, finely serrate or denticulate. Animal blind, ctenidial filaments very short, finger-like, osphradium small. Penis large, bent behind head and fused to mid-dorsal line.

Remarks: The new genus appears to be similar to *Beddomena* Iredale, *Tasmaniella* Ancey, *Jardinella* Iredale and Whitley, and *Valvatasma* Iredale, all from Tasmania and closely resembling one another. I have examined the animal of *Tasmaniella launcestonensis* (Johnston) which has the large penis centrally placed behind the head, but there are a number of differences such as well-developed eyes, numerous triangular-shaped gill filaments, and details of the shape of the penis. There are also radula differences. *Potamopyrgus* Stimpson, the only other hydrobiid genus in New Zealand, differs in the species being parthenogenic and in shell morphology. *Opacuincola* is probably derived from the Tasmanian snails, but further discussion should await detailed investigation of the living animals.

Opacuincola caeca n. sp.

Plate 4, figs. 1-4.

Description: Shell small, transparent, rather thin, yellowish, globose, umbilicate. Whorls $3\frac{1}{2}$, strongly convex, rapidly increasing, false margined, smooth except for fine growth lines. Periostracum thin, yellowish. Protoconch smooth, not separated off, whorls convex, slightly depressed. Base convex, with a moderately large umbilical chink opening into a very narrow umbilicus. Aperture oval, slightly oblique, angled distinctly above where it becomes separated from body whorl. Inner lip thickened and distinct from body whorl, concave, columellar portion not distinct, nearly vertical. Outer lip evenly concave, very slightly retracted above, a little more in outer half, but basal portion produced forward slightly. Juveniles have the outer lip rather more strongly retracted. Dead shells opaque white.

Radula moderately long and broad. Central tooth rather large, finely cusped, the central cusp not enlarged, about 9 serrations on each side; lateral wings distinct, with about 4 denticles on their margins; basal margin convex. Lateral tooth rather short, with parallel sides,

* Dominion Museum, Wellington, New Zealand.

strong, with about 9 moderately large cusps, the third to fifth largest; a strong rib on inner side forms a basal projection which is firmly embedded in the lingual membrane. Marginals long, approximately parallel sided, inner finely denticulate, cutting edge nearly straight; outer a little narrower, cutting edge curved, finely serrate (fig. 4).

Operculum egg-shaped, spiral, slightly concave, thin, transparent, pale yellowish, nucleus a third of total length from right end, about $2\frac{1}{2}$ indistinct spirals, the last very large. Columellar edge convex. No thickening, except a trace below nucleus (fig. 3).

The following details of the animal were taken from one rather poorly preserved specimen. Colour white. Head moderately large, snout short, bilobed. Cephalic tentacles rather long, with slight swellings at their bases but no indication of eyes. Mantle cavity large, ctenidial filaments very short, finger-like, about 10; osphradium very small, oval, simple. Kidney extends into mantle roof posteriorly, large, outer wall glandular, inner thin. Hypobranchial gland not very conspicuous. Rectum long, forming a loop in posterior part of mantle roof, all but the straight anterior portion filled with large, compact, oval faeces. Anus near outer edge of mantle cavity on right side. Buccal mass rather large, oesophagus bent sharply to left. Stomach rather small, containing fine material; style sac short, with a short crystalline style. Digestive gland small. Testis large, vas deferens long and coiled, swollen along nearly all of its length to form a seminal vesicle. Prostate rather short, not extending much into the mantle cavity, swollen, white, split in two by a deep groove, though this appears to be covered by a thin layer of epithelium. Vas deferens enters penis just behind base of right cephalic tentacle. A narrow portion of penis passes back obliquely to a point in the mid line behind the head, this portion being fused to the head. Remainder of penis large and curves round to lie alongside the right cephalic tentacle. There appears to be a retractor muscle attached to the swollen "basal" (i.e. most posterior) portion of the penis, while the free portion tapers to a point at its extremity. About half way along the free portion a short fold opens into a small papilla situated anteriorly on the ventral side (fig. 2).

Holotype: About one mile inside George Creek Cave, East Takaka, Nelson. Collected by Miss B. Elliott. In the Auckland Museum.

Height: 2.24 mm. Diameter: 1.84 mm.

Paratypes: Auckland Museum, Dominion Museum, Wellington.

Remarks: Some of the features of this species, such as the colourless animal and shell, and the lack of eyes, can be attributed to its subterranean habitat, while others, such as the position of the penis are probably phyletic. It would appear as though the penis has moved back from its typical position behind the right eye, to the mid-line of the body behind the head, though the vas deferens enters in the original position.

According to Miss Elliott, *Opacuincola caeca* only lives deep within the George Creek Cave, though empty shells are common washed up along the edges of the George Creek after heavy rain. Deep within the cave they are commonly found alive, about 2-3 under most stones. This is the only undoubted record of a subterranean snail from New Zealand. The solitary specimen of *Potamopyrgus subterraneus* Suter is probably a damaged *P. zelandiae* Gray (Dr. R. K. Dell, personal communication), and it appears to be doubtful if any species of *Potamopyrgus* live in truly subterranean conditions in New Zealand, though specimens are occasionally found in pumps and wells. Most of these specimens are probably derived from open water populations, either by regular recruitment or by accidental introduction.

I would like to take this opportunity to thank Miss Elliott for the material she has collected and for the very useful information she has provided.



PLATE 4

Fig. 1. *Opacuincola caeca* n.sp. Holotype.

Fig. 2. *O. caeca* Dorsal view of head showing the penis.

Fig. 3. *O. caeca* Operculum.

Fig. 4. *O. caeca* Radula.

FAMILY TORNIDAE

Genus *COCHLIOLEPIS* Stimpson, 1858.

Type species: *Cochliolepis parasitica* Stimpson, 1858.

Cochliolepis albiceratus n. sp.

Plate 5, figs. 5-8.

Description: Shell minute, discoid, smooth, transparent, widely umbilicate, yellowish white. Protoconch not clearly marked off, nucleus very small, sunken, second whorl bulging above it. Whorls $3\frac{1}{2}$ convex, false margined, smooth except for growth lines. Base convex, umbilicus broad, the sides convex and smooth. Aperture rounded, peristome sharp, a thin glaze over parietal wall, outer lip strongly and evenly retracted below to give a dorso-ventrally oblique aperture. A very indistinct notch in posterior corner of aperture. Periostracum very thin, pale yellow; aperture white.

Radula very small, rather long. Central tooth comparatively rather large, cusps small, about 4 on either side of the slightly larger median cusp. Lateral regions slightly expanded; middle part of ventral edge convex. Lateral tooth elongate, distal portion expanded, cusps small, about 4 on inner side of main cusp and about 8 on outer side; basal portion thickened and small. Marginal teeth about same length as lateral, inner finely denticulate, outer very finely serrate, slightly narrower than inner (fig. 8).

Operculum circular, thin, closely spiral (about 6 revolutions), transparent, pale yellowish, slightly concave, outer margin very narrowly upturned (fig. 7).

Extended living animal (one specimen) semitransparent white, apart from some orange-red pigment in the dorsal pedal muscles. Foot long, with parallel sides and cleft shallowly behind. Anterior margin of foot rather wide, straight, mobile, but not very extensile, strongly ciliated on lower edge, the propodium dorsally. Sole richly and powerfully ciliated, the cilia beating posteriorly. Sole mucous glands appear to be restricted to lateral parts of foot and extend along the sole from the posterior end to the vicinity of the large, triangular anterior mucous gland. No indication of a posterior pedal mucous gland. Locomotion rapid and appears to be entirely ciliary. Opercular lobes nearly cover the operculum. Snout moderately long, bi-lobed, ciliated ventrally, the cilia beating backwards. Buccal mass large, pinkish orange, visible through the epithelium of the head. Cephalic tentacles long, rather immobile, slender, parallel sided, with slight swellings terminally where a few stiff cilia are visible. A tract of cilia on ventral face of tentacles beat towards outer sides. Eyes large, in slight swellings at base of tentacles. A short posterior pallial tentacle present. No caudal tentacle. A group of white gland cells on inner side of each eye. Internal organs visible through shell. Eggs large; ctenidial filaments well developed, rather close together. Mantle cavity long, extending nearly half way round body whorl (fig. 6).

Holotype: Half way between Pukerua Bay and Paekakariki, on the Wellington West Coast. Under stones in mid-tidal pool containing *Hormosira*, 24/12/61. In the Auckland Museum.

Height: 0.49 mm. Maximum diameter: 1.08 mm.

Paratype: Collected with holotype. In the Dominion Museum, Wellington. The specimen from which the notes on the living animal, radula and operculum were obtained was collected from the same locality as the type series on the 24/1/65. The shell was destroyed. A single specimen was collected at MacGregor's Bay, Whangarei Heads by Mr. K. Hipkins of Auckland.

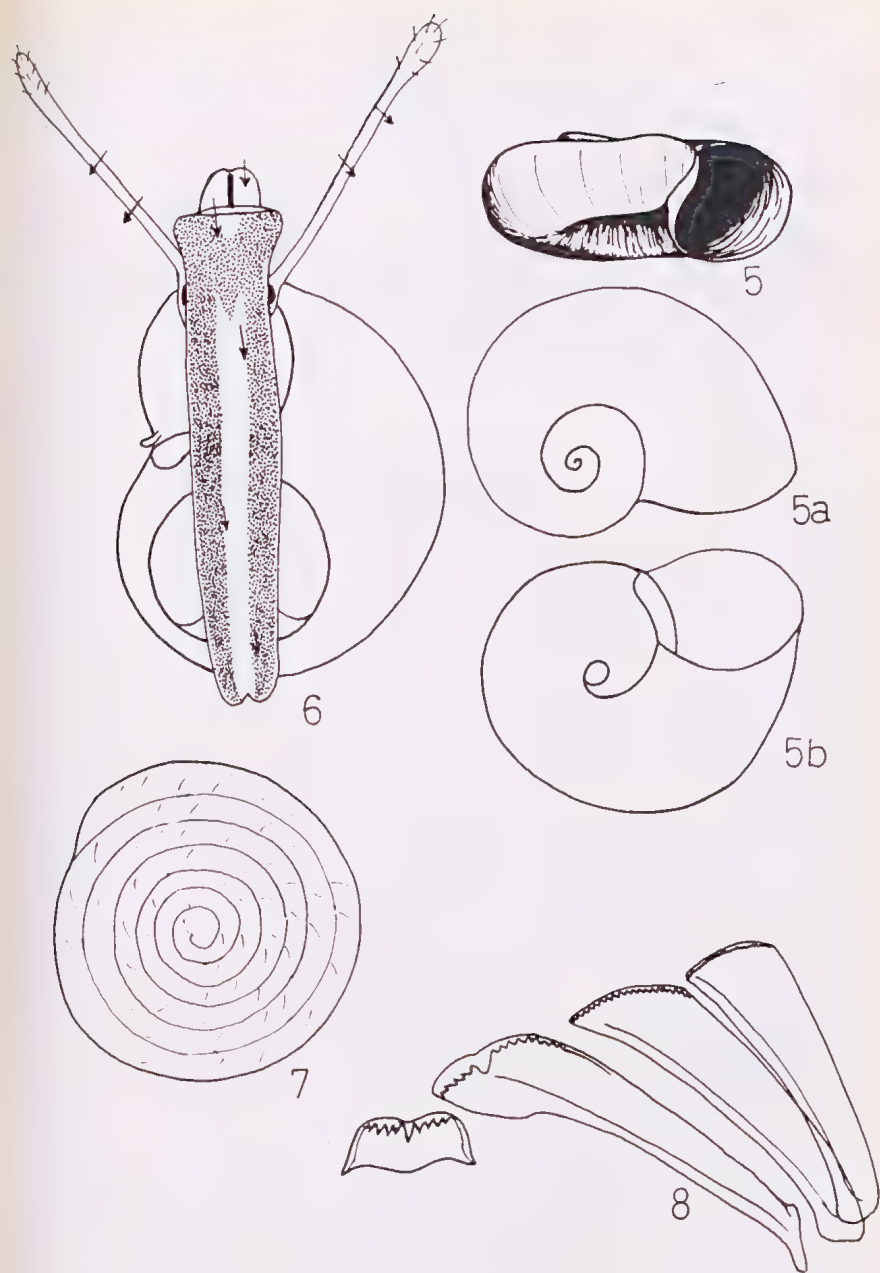


PLATE 5

- Fig. 5 a, b. *Cochliolepis albiceratus* n.sp. Holotype.
 Fig. 6. *C. albiceratus* Ventral view of living animal. Arrows show ciliary currents and stipple mucous glands.
 Fig. 7. *C. albiceratus* Operculum.
 Fig. 8. *C. albiceratus* Radula.

Remarks: The Tornidae are poorly known both at the generic and specific level, which makes the correct assignment of a new species to a genus difficult. The placing of the new species in *Cochliolepis* is only tentative, though it is similar to that genus in the possession of simple shell features and sunken protoconch. The genus typically ranges from Virginia to West Florida, some species being known to be associated with other animals. There is only one other tornid described from New Zealand, *Naricava (Tropidorbis) neozelanica* Powell.

Laseron (1958, *Rec. Aust. Mus.*, 24, p. 176) has included some shells resembling *C. albiceratus* in *Microdiscula* Thiele to which they have no real resemblance. The species in question are *M. involuta* Laseron, *M. planorbis* Laseron, and *M. augmenta* Laseron, and these should probably also be referred to *Cochliolepis* as they are clearly tornids.

CHITON COLLECTING AT PORT GAWLER, SOUTH AUSTRALIA

By K. L. MILNE*

Messrs. George Buick, Max Tilbook and the author went on an expedition to Port Gawler, South Australia, for the purpose of checking the statement of Cotton and Godfrey (1940) *The Molluscs of South Australia*, Part II, p. 469, that chitons may be found, among other stations, "... amongst the roots of mangroves ...". Also on p. 521, referring to *Acanthochiton bednalli*, "The species seems to prefer shallow water and muddy places and is often plentiful near mangrove swamps and similar situations."

One species identified as a variation of *Acanthochiton bednalli* (Pilsbry) was found in considerable numbers. Over 100 specimens were taken between the three of us in about 1½ hours, once their habitat was located. They were found in the mangrove swamps, at Port Gawler, at the southern end of the bay, about 30 to 50 yards inland from the outer edge of the line of trees, at low tide.

They were mostly found on the pneumatophores of the mangroves just above or just below the sand-mud. A few specimens were found on drift deposited bubble weed and old bits of sea-weed. Several large specimens were also found on the underside of old branches or pieces of wood half submerged at low tide. Those on pneumatophores could be found either by pulling up the pneumatophores or merely by removing the bubble weed and bending the pneumatophores so that the part below the sandy mud was visible, thus exposing the chitons, if present.

The large older specimens were usually found just above the sand-mud, while the juveniles and smaller specimens were nearly always below it.

The interesting point is that, as far as we know, this is the only known instance of chitons having been found living on a substance other than rocks or living sea-weed in South Australia. It was surprising to us to find them living on old submerged or partly submerged boughs and pieces of cut wood. This was apparently a preferred habitat for them, because in two instances there were three large specimens on such pieces of wood. Specimens were taken from mangrove roots some years ago by the late B. C. Cotton, but to our knowledge no precise details of the habitat were given.

* 14 Burlington Street, Walkerville, South Australia.